

# SIPHONIC STORM DRAINAGE

ACHIEVE MORE WITH LESS

 **MIFAB**<sup>®</sup>  
**HYDROMAX**<sup>®</sup> 

# SIPHONIC ROOF DRAINS



## What is Siphonic Drainage

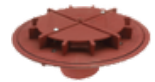
Traditional gravity drainage requires 2/3 air & slope to move storm water. Sloped pipes intrude on valuable livable space requiring numerous penetrations, vertical drops to ground level, and multiple civil connections.

In a siphonic system **pipes are designed to run flat and fill 100%, no air is needed. Pipe diameter & materials are reduced by half** and can be routed to a single civil connection.

**Gravity drains** require 2/3 air and large pipes



**Siphonic drains** utilize a baffle plate to eliminate air; pipes sized for 100% fill ratio, reducing pipe diameter by 1/2



## How Siphonic Drainage Works

Siphonic storm drainage is based on the simple principle of a siphon with negative pressure, caused from the height of the building, to pull storm water off the roof. The bigger the difference the faster the flow.



**Pipes are flushed at high velocity and self-clean as air exits the system.**

No pitch, slope, or equipment needed. Less penetrations, vertical drops, trenching, civil connections, and site disturbance. Just think of what you can do with all that extra ceiling space.

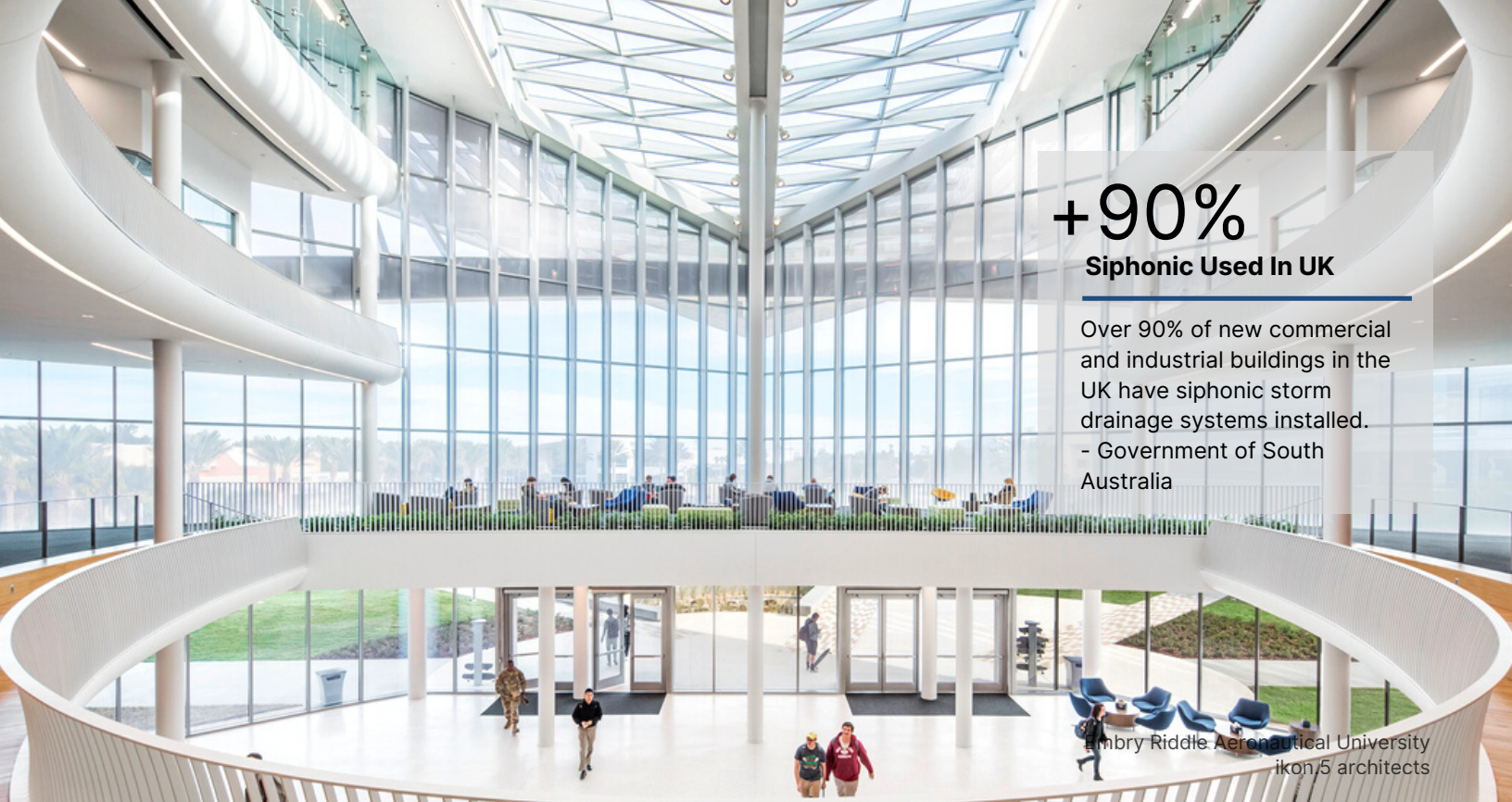
**Pitch does not dictate design. You do.**

## What's Wrong with Pitch

1. More material required
2. More space required
3. Numerous vertical drops & penetrations
4. Added civil connections & site disturbance
5. Pitch dictates pipe routing & discharge
6. Increased building elevations
7. Added chases needed throughout
8. Ponding & clogs

Siphonic pipes run flat. By eliminating pitch and air smaller pipes stay in the ceiling, running to an exterior wall before discharging where you want.

**Due to the lack of air, noise is reduced by up to 7% in full siphonic mode and water discharges up to 3x as fast.** Siphonic drainage reduces ponding, clogs, and extends roof longevity.



**+90%**  
Siphonic Used In UK

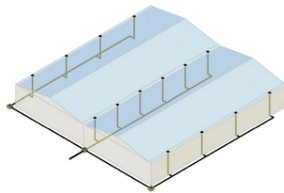
Over 90% of new commercial and industrial buildings in the UK have siphonic storm drainage systems installed.  
- Government of South Australia

Embry Riddle Aeronautical University  
ikon.5 architects

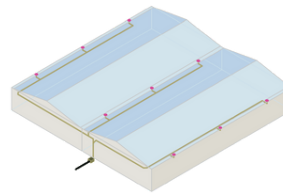
## Less is More

Siphonic roof, gutter, terrace, trench, and parking deck drains by HYDROMAX reduce vertical drops, civil connections, project cost, construction time, material amount, **increase site sustainability**, space and provide the owner with a design flexible storm water drainage system.

### Gravity VS Siphonic 59,600 sqft. building



**Gravity**  
Required 1,600 ft of pipe  
Required 6"-18" diameter



**Siphonic**  
Required 1,000 ft of pipe  
Required 3"-8" diameter

**-50%**  
Reduction in  
Pipe Size

**-38%**  
Less Pipe &  
Material

## Siphonic Drains Save

### Owner

- **Less cost** provides savings allowance for other scopes
- **Less install cost** with reduction of civil connections, trenching & site disturbance
- **More space**, increased ceiling height and fewer design restrictions and obstructions
- **Reduced construction time** and coordination with other scopes
- **Earn LEED points in 6 categories:** Sourcing of Raw Materials, Innovation in Design, Reduced Site Disturbance, Rain Water Management, Protect & Restore Habitat, Water Use Reduction
- **Easier to maintain** with self-cleaning system
- **Increased roof longevity** with reduced ponding & clogs
- **Pre-installation meeting** with installation team
- **Future additions**, allows easier integration for any future renovations or design changes

### Architect / Engineer

- **Less cost** provides savings allowance for other scopes
- **More design freedom**, less vertical drops, drain locations, penetrations,
- **More space**, increased ceiling height and fewer design restrictions and obstructions
- **Increase site sustainability**, reduction of civil connections, trenching & site disturbance
- **Reduced construction time** and coordination with other scopes
- **Earn LEED points in 6 categories:** Sourcing of Raw Materials, Innovation in Design, Reduced Site Disturbance, Rain Water Management, Protect & Restore Habitat, Water Use Reduction
- **Complete coordination with MEP**
- **Complimentary design**, calculation, balancing, and bill of materials provided

\*Savings amount varies by project.

# DESIGNING WITH SIPHONIC

## #1 MYTH

**A siphonic roof drainage system requires additional ponding on the roof to submerge the drain.**

False, siphonic drains actually produce less ponding than traditional gravity drains. At only ¼" of ponding on the roof, the siphonic action will start to take effect.

## FREQUENTLY ASKED QUESTIONS

### **Is there a MIN vertical drop required from the roof drain?**

No. There is nothing in the ASPE 45 Standard that dictates a MIN requirement. The limitation will be based on the dimensions of the fitting itself using the MIFAB HydroMax Siphonic Drains.

### **What is the minimum square footage for a siphonic drain to function?**

Size is dependent upon rainfall rate; 2" rate requires minimum 1,107 sqft., 3" rate requires minimum 738 sqft., 4" rate requires minimum 554 sqft. (Based on model MH-300)

### **Can Siphonic Drainage be used on high rises? Is there a MAX Building height?**

Siphonic Drainage can be used on any height project. There may be pressure limitations from the increased height, but there are several design options to handle each scenario.

### **Are any pumps required for the system to operate?**

No. Siphonic Drainage utilizes the height of the building to generate negative pressure which pulls the water from the roof.

### **Does a Siphonic Drain require a debris guard/dome?**

No. A siphonic drain generates a negative pressure pulling any debris towards the drain, and completely through the system. This self-scouring effect takes place with only a ¼" of ponding on the roof.

### **If the pipe runs flat, how does the water discharge?**

Water always seeks to find its own low point, level. The water will flow towards the vertical discharge.

### **Why are we just now hearing about this? Why aren't more siphonic storm drainage systems used?**

Lack of education and communication, 100%. Widely used in Europe for over 50 years, siphonic is fully approved by ASPE & ASME, and requires a stamped approval from an engineer. MIFAB provides all MEP coordination.

### **More questions? Want a complimentary design review? We got you.**

Visit us at [mifab.com](http://mifab.com) to submit your project information and files. Contact [Imaher@mifab.com](mailto:Imaher@mifab.com), call 800.465.2736, or text 713.591.6726.



**HYDROMAX**  
Siphonic Drain Styles